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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------------|------------------|
| 09/921,358 | 08/02/2001 | Tomoharu Kurita | 212865 | 6028 |
| 23460 | 7590 | 12/16/2004 | | |
| LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6780 | | | EXAMINER KRUER, KEVIN R | |
| | | | ART UNIT 1773 | PAPER NUMBER |

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,358

Applicant(s)

KURITA ET AL.

Examiner

Kevin R Krueer

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7 and 18-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7 and 18-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on August 2, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 1, 2004 has been entered.

Drawings

2. The drawings filed August 2, 2001 are accepted.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

4. The rejection of claims 1-5, 7, and 18 under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al (US 4,377,652) in view of Akahoshi (US 4,970,107) has been overcome.

Ohmura does not teach the claimed polymer. Specifically, the "Ar" of formula (I) (claim 1) cannot be selected such that the polymer reads on the claimed polymer. Ar" (col 3, line 20) would read on the claimed polymer if utilized in the polymer of formula (I). However, Ohmura does not teach that Ar" may be utilized in said formula.

5. Claims 1-5, 7, and 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (US 3,936,575) in view of Frost (US 3,984,375) and in view of Akahoshi (US 4,970,107).

Watanabe teaches a metal-clad laminate for flexible printed circuit boards comprising a resin selected from polyvinyl chloride, polyamide-imide, and polyimide (col 1, lines 9+). The conductive foils utilized in such laminates are conductive foils with a thickness of 15-110um (col 9, lines 53+).

Watanabe does not teach a polyamide-imide resin that reads on the claimed "heat resistant resin." However, Frost teaches a polyamide-imide resin consisting essentially of a repeating unit depicted by the formula in the abstract. When R is the radical of column 2, line 11, the formula reads on formula 1 of claim 1. When R is the radical of column 2, line 27, the formula reads on formula 2 of claim 19. The polyamide-imide possesses thermal stability, toughness, good flexibility, and other properties (col 1, lines 8+). The polymer is useful as a film for electrical insulation (col 1, lines 8+). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the polyimide-amide polymers taught in Frost as the resin in the printed circuit board taught in Watanabe. The motivation for doing so would have been that said polymers possess thermal stability, toughness, and good flexibility.

Neither Watanabe nor Frost teaches that the surface of the heat resistant resin that contacts the metal layer should have the claimed surface roughness. However, Akahoshi teaches that a copper layer for a printed circuit board may be surface roughened so that it has pit-like recesses with diameters of from about 0.1-1.0um (col 1,

Art Unit: 1773

lines 6+). Said roughness improves adhesion. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to roughen the copper layer of the printed circuit board taught in Watanabe so that it had a roughness of 0.1-1 μ m. The motivation for doing so would have been to improve adhesion between the resinous layer and the copper layer.

With respect to the claimed insolubility content, initiation tear strength, elastic modulus retentivity, dimensional stability, sold heat resistance, adhesion, and radius of curvature, of the claimed "heat resistant polymer," the examiner takes the position that the laminate taught by Watanabe in view of Frost necessarily possess said properties because said laminate comprises the same layers, having the same composition and laminated in the same relative order as the claimed laminate.

With respect to the method limitations of claim 1 that the laminate is produced by "applying a solution containing an organic solvent and a condensation polymer to the metal foil and drying the laminate," Frost teaches that the polymer may be applied as a solution, and baked (col 4, lines 19+). Furthermore, the examiner notes that the method of making a claimed product does not patentably distinguish a claimed product from the product taught in the prior art unless it can be shown that the method of making the product inherently results in a materially different product. In the present application, no such showing has been made. The examiner takes the position that the laminate taught by Watanabe in view of Frost reads on the claimed laminate because it comprises the same layers, having the same composition and laminated in the same relative order as

the claimed laminate. The laminate taught by Watanabe in view of Frost is understood to read on the laminates claimed in claims 2 and 3 for similar reasons.

Response to Arguments

Applicant's arguments filed June 1, 2004 and November 9, 2004 have been fully considered but they are not persuasive.

Applicant's arguments with respect to Ohmura et al (US 4,377,652) in view of Akahoshi (US 4,970,107) are moot since the rejection has been overcome.

Applicant argues that the newly claimed method of making the claimed laminate results in superior characteristics such as high heat resistance, dimensional stability, chemical resistance, adhesion, and high alkali resistance (page 5, lines 8-12 of the specification). With regard to the rejections based upon the teachings of Frost, Applicant's arguments are not persuasive because Frost teaches that the claimed laminate should be made by the claimed method limitations. Specifically, Frost teaches that the polymer may be applied as a solution, and baked (col 4, lines 19+). Thus, the amendment fails to distinguish the claimed laminate from the applied art. Furthermore, said "superior characteristics" which applicant argues are inherent to a laminate made by the claimed method limitations are understood to be latent properties of the laminates of the applied art.

Applicant further argues that there is not motivation to combine the teachings of Watanabe and Frost. The examiner respectfully disagrees. Watanabe teaches that epoxies and polyamide-imides are used interchangeably as insulating bases in printed circuit boards. Furthermore, Frost teaches that the claimed polyamide-imide possess

Art Unit: 1773

thermal stability, toughness, and good flexibility. Thus, the examiner maintains the position that Frost provides motivation for utilizing the claimed polyamide-imide as the insulating base taught in Wantanabe.

Applicant further argues that none of the references disclose the problem of curling. However, the examiner reminds applicant that the motivation provided by the prior art for combining references does not have to be the same as applicant's motivation. Furthermore, the examiner notes that the arguments of counsel cannot take the place of evidence. While the specification notes that the inventive laminate is considered to exhibit superior characteristics, the specification does not make clear to what the inventive laminate has been compared. Thus, there is no suggestion in the specification that the claimed laminate inherently exhibits superior characteristics in comparison to applied prior art. Applicant's arguments are, therefore, not persuasive because Applicant has not shown that the claimed method of making the product inherently results in a materially different product.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin R. Kruer
Patent Examiner-Art Unit 1773